

Kiama Shores Seniors Living Development

Operational Waste Management Plan

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1. Introduction

This Operational Waste Management Plan has been prepared on behalf of Kiama Shores Pty Ltd to accompany a Development Application for the Seniors Living project located at 33 Collins St, Kiama, NSW. The development falls within the Kiama Council LGA.

The project includes the construction of a new Seniors Living Development. In relation to this waste management plan, the key components of the new development are

- A three level apartment block of one, two or three bedroom size.
- A commercial space fronting Collins St, with two levels of accommodation (3 units) for management/caretakers
- Communal and recreational facilities.

As advised by Kiama Council, the waste management plan has been written in accordance with the Kiama Development Control Plan 2012, chapter 11 – Waste Requirements, as well as applying other aspects of industry best practice for waste management in residential developments.

Figure 1 – Proposed area for development



Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements. The waste management plan has three key objectives:

1. **Ensure waste is managed to reduce the amount of waste and recyclables to land fill** by assisting tenants and visitors to segregate appropriate materials that can be recycled; displaying signage to remind and encourage recycling practices; and through placement of recycling and waste bins to reinforce these messages.
2. **Recover, reuse and recycle** generated waste wherever possible.
3. **Compliance** with all relevant codes and policies.

2. Waste Generation

2.1 Waste Streams

Based on the development profile, the following waste streams would be expected on a regular basis:

- General waste: All non-recyclable materials;
- Commingled recycling: Cardboard, paper, plastic & glass bottles & cans;
- Green waste: Organic waste, grass clipping, branches and leaves.

Other wastes may be generated, but these would be in small volumes and irregular in terms of when generated. The management of the site will conduct a waste assessment once the site is operational to determine the additional types and quantities of wastes that may be generated. Following this, appropriate management systems will be implemented and where necessary generators advised of these management requirements.

2.2 Waste Generation Estimates

Calculations for the types and quantities of waste that will be generated are based on averages for quantity of waste generated and composition as determined by industry data (ie., data/information provided by WACS' waste audits conducted in a broad range of sectors) as well as consideration of the waste generation rates as detailed in the Kiama Council Development Control Plan 2012, Chapter11 – Waste Requirements.

2.2.1 Residential Development

It is estimated that the residential component of the development will generate a total of **12,760** litres of waste and recyclables per week (4,640 litres of general waste, 6,960 litres of recyclables and 1,160 litres of green waste).

Table 1 – Waste and recycling generation rates per week (residential)

Stream	Litres/Unit/Week	L/week
General Waste	80	4,640
Recycling	120	6,960
Green waste	20	1,160
TOTAL	220	12,760

Note:

- The volumes are based on correct segregation of waste and recyclables

Based on the generation calculations and Kiama Council bin provision/servicing regimes (and using 240 litre MGB), the following is the estimated number of bins required and associated footprint

Table 2 – Waste and recycling bin requirements and footprint

Waste Stream	Bin Size (MGB)	No. of Bins	Clearance Frequency/week	Capacity (weekly)	Estimated volume / week	Footprint per bin (m ²)	Total Footprint
General Waste	240	20	1	4,800	4,640	0.42	8.4
Recycling	240	29	1	6,960	6,960	0.42	12.18
Green Waste	240	5	1	1,200	1,160	0.42	2.1
TOTAL		54		12,960	12,760		22.7

Taking into account a 30% allowance for bin movement within the storage room, this results in a total space allocation requirement of approximately **30m²**.

A Waste Storage Room of 44.7m² is proposed.

Note that also based on Kiama Council requirements, an allocation of minimum **8m²** is recommended for a bulky waste storage area.

A Bulky Waste area of 9.6m² is proposed.

Figure 2 – Example of a bulky waste storage area



2.2.2 Commercial Development

It is estimated that the commercial component of the development will generate a total of **712** litres of waste and recyclables per week (356 litres of general waste and 356 litres of recyclables). The commercial development area totals at 165m². Council has stipulated that the area will not be used as a food premises and is likely to be an office.

Table 3 – Waste and recycling generation rates per week (commercial)

Waste Type	L/week
General Waste	356
Recycling	356
TOTAL	858

Kiama Council requires the storage area for commercial waste to be separate to the storage area for residential waste. This can be a completely separate room for commercial waste or a segregated area within the residential waste bin. For example, separated by a chain link fence area. Only commercial tenants will have key access to the commercial waste areas. This will avoid any conflict between residential and commercial tenants.

Based on the generation calculations the following is the estimated number of bins required and associated footprint:

Table 4 – Waste and recycling bin requirements and footprint (commercial)

Waste Stream	Bin Size (MGB)	No. of Bins	Clearance Frequency/week	Capacity (weekly)	Estimated volume / week	Footprint per bin (m ²)	Total Footprint
General Waste	240	2	1	480	356	0.42	0.84
Recycling	240	2	1	480	356	0.42	0.84
TOTAL		4		960	712		1.7

Taking into account a 30% allowance for bin movement within the storage room, this results in a total space allocation requirement of approximately **2.2m²**. A separated waste storage area for commercial waste of 8.8m² is proposed.

3. Waste Storage

3.1 Waste Storage Location

The following diagram illustrates both the residential and commercial premises waste storage areas located in the Basement. Bulky waste storage area also shown.

Figure 1 – Waste storage rooms

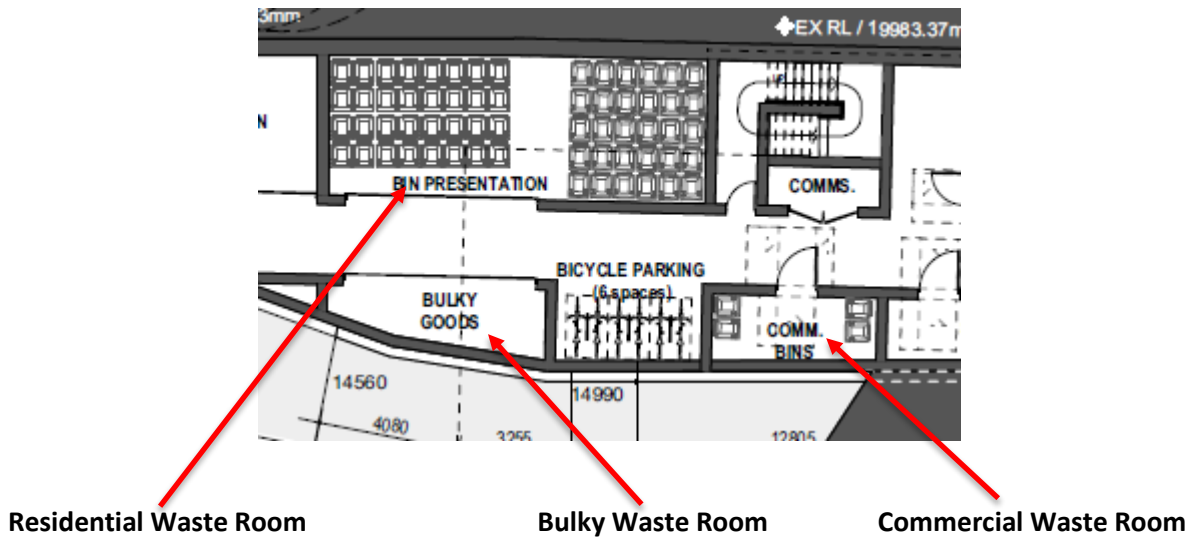
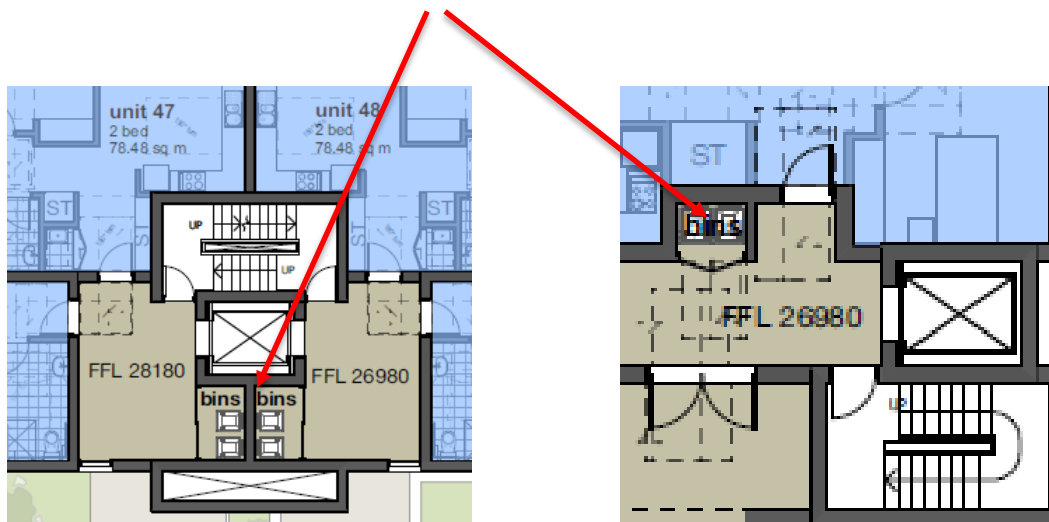


Figure 2 – Example of garbage holding rooms located on each level

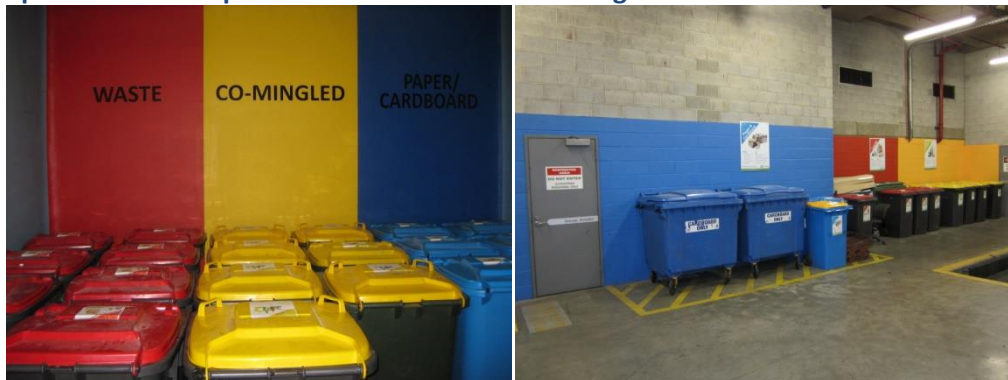


3.2 Waste Storage Design

In keeping with best practice sustainability programs, all waste areas; reuse areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained.

The waste and recycling bins will be colour coded and clearly signed. Each stream will be located in a designated area. This will assist in easy identification of correct bins by users. This principle will also apply to the bulky waste room – signage will clearly indicate where to deposit materials.

Photographs 1 & 2 - Examples of waste room colour coding



The waste rooms will contain the following to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- waste room floor with a two pack epoxy;
- waste room walls and floor surface is flat and even;
- all corners coved and sealed 100mm up, to eliminate build-up of dirt;
- a water facility with hose cock provided for washing the bins;
- waste water discharge from bin washing will be drained to sewer in accordance with the relevant water board;
- tap height of 1.6m;
- storm water access preventatives (grate);
- all walls painted with light colour and washable paint;
- equipment electric outlets installed 1700mm above floor levels;
- the room mechanically ventilated;
- light switch installed at height of 1.6m;
- well lit (sensor lighting recommended);

- optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- all personnel doors are hinged and self-closing;
- waste collection area will hold all bins – with ease of access for bin movements;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured.

Occupational Health and Safety issues such as slippery floors in waste rooms and the weight of the waste and recycling receptacles will need to be monitored. Building management will monitor the bin storage area and all spills will be attended to immediately.

4. Waste Management Systems

4.1 Waste System

The following summarises the recommended waste and recycling systems that will be implemented within the development. These recommendations are based on Kiama Council requirements and systems implemented for similar developments (ie., types of tenants and residential areas).

All tenants will be briefed on the proper use of waste management system as it is imperative that the recycling stream remains free of contamination to ensure compliance with Council collection protocols. Tenants will be encouraged to maximise the separation of general waste and mixed recyclables to aid the proper disposal of all materials.

Waste and recycling collection services will be provided by the Council to residents. Commercial garbage pickup will be supplied by the appointed private contractor. The appropriate collection frequencies will be determined in consultation with the Council – at present for residential, this is weekly for general waste, recyclables and green waste. For commercial pickup- collection days and frequency can be nominated by the business.

Containers located within the apartments for waste and recycling will be consistent, and able to hold a minimum of 2 days waste. Temporary garbage holding rooms will be available on each level for residents to dispose of their waste. Residents will be responsible for transferring their waste to these rooms. Each room will hold 3 x 240L bins, these bins will service the three different waste streams generated by the residents. The building caretakers will be responsible for changing the bins when they become full and taking them down to the garbage room in the basement.

The following table outlines the colour coding that has been developed by Standards Australia and will be adopted for this development.

Table 4 – Standards Australia waste/recycling container colour coding

Waste Stream	Bin Body Colour	Lid Colour
General Waste	Green	Red
Commingled Recycling	Green	Yellow
Green Waste	Green	Light Green

On collection days, caretakers will ensure all bins are presented and ready for pick up and clear access is available to do so. The building maintenance contractor will also be responsible for organising and cleaning bins within the garbage room. The maintenance contractor will also be responsible for reporting any faults within the facility relating to garbage collection, ie broken bins, faulty lights, truck turntable etc.

To ensure that the proposed management actions continue, as discussed, inclusion of the requirement for waste/recycling bins to be ready and presented for collection will be contained within the Strata By-laws as well as within the service contract for the maintenance/cleaning contractor.

Appendix A contains illustrations of bins (and other waste management equipment), that could be used by cleaners/maintenance personnel in regards to bin types and moving bins. The pictures provide examples of the different options for equipment such as MGB, tugs for transporting bins, trolley unit and a wheelie-safe trolley.

Signage will be a crucial element of the waste management system. Appendix B contains examples of signage. These are the type of signs that should be used throughout the development and waste storage area. Other signs can be accessed from the NSW EPA website at:

<http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>.

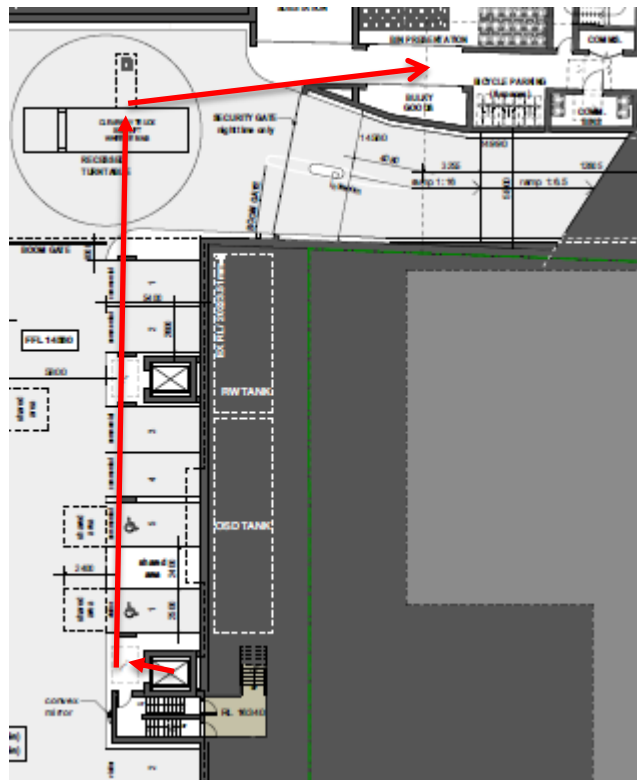
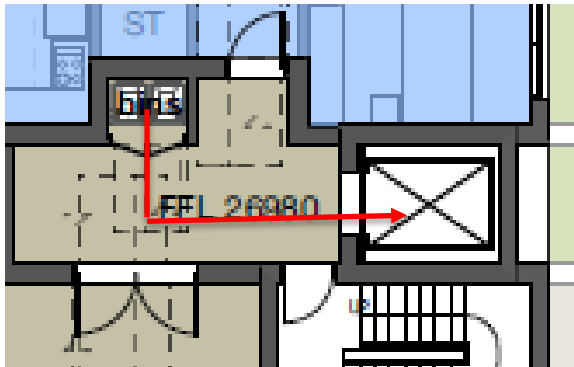
Items such as furniture/whitegoods stored within the bulky items storage cage/room will be managed by building management and offered to other residents for reuse if desired. If items remain unclaimed, appropriate collection organisations will be called to collect the items for recycling/reuse as required.

A summary of other management aspects are:

- Waste/Recycling bins are to be Mobile Garbage Bins (MGB's) and sized in accordance with Kiama Development Control Plan 2012, Chapter 11 – Waste Requirements.
- Storage of bins is in the basement in an adequately sized room. Access to the room is via a roller door, to allow both the ease of handling of cleaning staff, and for use by occupants of the adaptable unit.
- Access to the bin room is via both a centrally located lift and stairwell. This access connects all levels and apartments/tenancies.
- All tenants (residential and commercial), will have space allocated within the tenancy for the interim storage of waste and recyclables. As required the space allocated will be able to “fit” bins that have the capacity to store a minimum of 2 days' worth of waste and recyclables
- All waste/recycling MGB's will be stored within the waste storage area in the Basement for collection by Council.
- Commercial waste will be stored in a separate area to the residential waste.
- It is not anticipated that the commercial tenants will generate any hazardous waste. However, should this eventuate, specific storage and management procedures will be implemented in accord with NSW EPA requirements.
- All tenants will have the responsibility of ensuring that wastes/recyclables from their premises are transported to the Basement waste storage area and then deposited into the correct MGB. This will be achieved by education programs, signage within tenancies, colour coded and signed bins and waste storage areas, written information and providing feedback on correct and incorrect management processes.
- Waste and recyclables will be transported by the caretaker via the lift.
- Mechanical ventilation is to be provided to the waste room and holding rooms on each level
- Availability of communal gardening and composting facility to provide residential community involvement and education is proposed in the Winter Garden area on the North Eastern boundary.

4.2 MGB Servicing

The following diagram illustrates the pathway for the movement of MGB's from the temporary garbage holding rooms to the waste storage room in the basement (Red arrows).



5. Tenant Education

All tenants will receive information regarding the waste collection systems including how to use the system, which items are appropriate for each stream and collection regimes. Appropriate signage and updated information will also be provided.

All waste receptacles will be appropriately signed and additional room signage is usually provided from most waste contractors during implementation of the waste contract. Examples of signage are included in Appendix B.

It is recommended that all signs should;

- Clearly identify the waste/recycling stream;
- Use correct waste/recycling stream colour coding;
- Identify what can and cannot be disposed of in the receptacle; and
- Include highly visual elements to accommodate for individuals with inadequate English literacy.
- As part of the staff induction process, a waste and recycling toolkit will be provided. This toolkit will include the details of each of the systems in place; acceptance criteria for each stream and how each stream is managed.

On a monthly basis waste and recycling performance reports should be reported back to all tenants so that they are aware of their performance and areas for improvement.

Appendix A – Waste Management Equipment

The following diagrams illustrate colours and sizes of different bins that could be used within the development.

Figure 1 – MGB bin



Figure 2 – MGB bin



Figure 3 – Indicative size of MGB



Figures 4, 5, 6 and 7 – Bin movers and tugs





Appendix B – Example Signage

LANDFILL

A red rectangular sign with a large white checkmark on the left. In the center, there is a photograph of various household waste items including a plastic bag, a ceramic bowl, a polystyrene container, a window pane, and chip packets. On the right side, there are three circular icons with red slashes through them, each containing a different type of waste: a plastic bottle, a paint can, and a brick.

- ✓ Plastic Bags
- Ceramics
- Polystyrene
- Window glass, mirror & pyrex
- Chip packets & wrappers

NO RECYCLABLES

NO OIL & PAINT

NO BUILDING MATERIALS

Don't waste YOUR future

MIXED RECYCLING

A yellow rectangular sign with a large white checkmark on the left. In the center, there is a photograph of various recyclable items including an aluminium can, a steel can, a plastic milk carton, a plastic soft drink bottle, a glass bottle, and a cardboard box. On the right side, there are three circular icons with red slashes through them, each containing a different type of waste: a concrete cup, a plastic bag, and a polystyrene container.

- ✓ Aluminium & steel cans
- Plastic milk & Juice containers
- Plastic soft drink & water bottles
- Glass bottles & jars
- Paper & Cardboard

NO CONCRETE CUPS

NO PLASTIC BAGS

NO POLYSTYRENE

Don't waste YOUR future